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SPECIFICATION FOR SOLUBLE STARCH, MICROBIOLOGICAL GRADE

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

SPECIFICATION FOR SOLUBLE STARCH, MICROBIOLOGICAL GRADE

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Indian Standard

SPECIFICATION FOR SOLUBLE STARCH, MICROBIOLOGICAL GRADE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 16 January 1975, after the draft finalized by the Food Hygiene, Sampling and Analysis Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Unless the ingredients used in media for microbiological work are of uniform quality, the results obtained would be erroneous and would be unreliable. Since the media used in different laboratories often differ greatly in their quality, the results of microbiological work at different laboratories cannot be compared. Therefore, with a view to unifying the practices of different laboratories dealing with microbiology and providing guidance to the indigenous manufacturers regarding the quality of various ingredients, it has been decided to bring out a series of Indian standard specifications for ingredients commonly used in media for microbiological work.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for soluble starch, microbiological grade.

2. REQUIREMENTS

2.1 The material shall be in the form of a fine white powder. It shall be soluble in hot water to give a slightly turbid solution.

2.2 When a 10 percent suspension of soluble starch is shaken for 3 minutes and filtered, the filtrate shall neither be alkaline nor more than faintly acidic to litmus paper.

*Rules for rounding off numerical values (*revised*).

2.3 The material shall conform to the test prescribed in Appendix A.

2.4 It shall also conform to the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR SOLUBLE STARCH, MICROBIOLOGICAL GRADE

Sl No.	Characteristic	Requirement	Method of Test, Ref to		
			Appendix of this Standard	Cl No. of IS : 6854-1973*	Cl No. of IS : 4706-1968†
(1)	(2)	(3)	(4)	(5)	(6)
i)	Moisture, precent by mass, *Max*	10	—	4	—
ii)	Ash, percent by mass, *Max*	0·3	—	6	—
iii)	Lead (Pb), percent by mass, *Max*	0·001	—	14	—
iv)	Chloride, percent by mass, *Max*	0·005	B	—	—
v)	Starch, percent by mass, *Min*	98·0	—	—	6

*Methods of sampling and test for ingredients used in media for microbiological work.

†Methods of test for edible starches.

3. PACKING, MARKING AND STORAGE

3.1 Packing — The material shall be securely packed in well-filled wide mouth containers so as to preclude contamination of the contents.

3.2 Marking — Each container shall be marked legibly to give the following information:

a) Name of the material including the words 'Microbiological Grade',

b) Name and address of the manufacturer,

c) Minimum net content, and

d) Batch or code number.

3.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

3.3 Storage — The material shall be stored in a cool and dry place.

4. SAMPLING

4.1 The representative samples of the material shall be drawn according to the method prescribed in **3** of IS : 6854-1973*.

5. TESTS

5.1 The test shall be carried out as prescribed in **2.2, 2.3** and in col 4, 5 and 6 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise pure chemicals and distilled water (*see* IS : 1070-1960†) shall be employed in the test.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the test results.

APPENDIX A

(*Clause* 2.3)

SENSITIVITY TEST

A-1. REAGENTS

A-1.1 Iodine Solution (0·1 N) — Dissolve 18 g of potassium iodide and 12·69 g of iodine in distilled water. Make up the volume to 100 ml.

A-1.2 Standardization of Iodine Solution — Transfer 50 ml iodine solution (*see* **A-1.1**) to an Erlenmeyer flask. Titrate with sodium thiosulphate solution (*see* **A-1.6**) until the iodine turns very pale yellow in colour. Add 2·5 ml starch solution and titrate until blue colour disappears. Calculate normality as follows:

$$\text{Normality} = \frac{\text{ml sodium thiosulphate} \times \text{normality of sodium thiosulphate}}{\text{ml iodine}}$$

A-1.3 Hydrochloric Acid — Approximately 1 N.

A-1.4 Starch Solution — Mix about 1 g arrowroot starch with 10 ml water and pour slowly with constant stirring into 200 ml boiling water. Boil until a thin translucent fluid is obtained. Let it settle and use the clear supernatant liquid.

A-1.5 Potassium Dichromate — Reagent grade.

*Methods of sampling and test for ingredients used in media for microbiological work.

†Specification for water, distilled quality (*revised*).

A-1.6 Sodium Thiosulphate (0·1 N) — Dissolve about 25 g sodium thiosulphate in water. Boil gently for 5 minutes and transfer the solution while hot to its storage bottle. Store the solution in a brown bottle in a dark and cool place.

A-1.7 Standardization of Sodium Thiosulphate — Accurately weigh 0·2 to 0·23 g potassium dichromate (dried for 2 hours at 100°C) and transfer to a glass-stoppered flask. Dissolve in 80 ml distilled water containing 2 g potassium iodine. Add by swirling, 20 ml hydrochloric acid (*see* **A-1.3**). Immediately stopper and place the flask in the dark for 10 minutes. Cool the flask for about a minute in ice-water. Titrate with sodium thiosulphate solution until most of the iodine has been consumed. Add 2·5 ml starch solution and continue the titration with sodium thiosulphate solution, to its end point which varies from bluish green to clear green. Calculate normality as follows:

$$\text{Normality} = \frac{\text{potassium dichromate, g} \times 1\,000}{\text{sodium thiosulphate, ml} \times 49{\cdot}032}$$

A-2. PROCEDURE

A-2.1 Mix 1 g of the material with a little cold water and add to 200 ml boiling water. Add 5 ml of the solution to 100 ml water and add 0·05 ml of iodine solution. The deep blue colour shall be discharged by 0·05 ml of 0·1 N sodium thiosulphate.

APPENDIX B

[*Table* 1, *Item* (iv)]

LIMIT TEST FOR CHLORIDE

B-1. APPARATUS

B-1.1 Nesslers' Cylinders — 50 ml two-mark.

B-2. REAGENTS

B-2.1 Nitric Acid, Concentrated — sp gr 1·42, reagent grade.

B-2.2 Silver Nitrate Solution — Dissolve 5 g of silver nitrate, reagent grade, in 100 ml distilled water. Store in a brown bottle.

B-2.3 Hydrochloric Acid Standard Solution — Prepare 0·01 N solution and standardise against standard sodium hydroxide solution, using phenolphthalein as an indicator.

B-3. PROCEDURE

B-3.1 Weigh to the nearest 0·01 g, the required amount of sample under test and dissolve in 30 to 40 ml of distilled water. If necessary, neutralise the solution to litmus with nitric acid. Add 1 ml nitric acid and if after acidification the solution is not clear, filter it through a filter paper that gives a negative test for chloride. Similarly, measure 0·1 ml or more of the hydrochloric acid solution (*see* **B-2.3**), containing the quantity of chloride, specified in the material specification. Make up to 30 to 40 ml and add 1 ml nitric acid. To the test and standard solution, add 1 ml each of the solution of silver nitrate. Make up the volumes to 50 ml, mix well and stand for 5 minutes. Compare the turbidities. During the above operations, protect the solutions from direct sunlight.

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5404-1969	Code of practice for handling of food samples for microbiological analysis
5887-1970	Methods for detection of bacteria responsible for food poisoning and food-borne diseases
6850-1973	Agar, microbiological grade
6851-1973	Meat extract, microbiological grade
6852-1973	Bile salts, microbiological grade
6853-1973	Peptone, microbiological grade
6854-1973	Methods of sampling and test for ingredients used in media for microbiological work
7004-1973	Yeast extract, microbiological grade
7127-1973	Tryptone, microbiological grade
7203-1973	Casein hydrolysate (acid digested), microbiological grade
7128-1973	Proteose peptone, microbiological grade
7535-1975	Liver extract, microbiological grade
7536-1975	Soluble starch, microbiological grade
7590-1975	Gelatin, microbiological grade
7591-1975	Malt extract, microbiological grade

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